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Theorizing The Technical Expert Influence In Corporate Crisis Communication

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Abstract
This paper introduces the Technical Expert Micro-Influencer Model (TEMIM), explaining how technical experts operating as digital micro-influencers influence outcomes during complex technical crises. Using the Boeing 737 MAX crisis (2018-2020) as a case study, we analyze 61 documents through systematic coding and temporal analysis. Three primary mechanisms influence stakeholder understanding: expertise validation processes, digital engagement dynamics, and crisis interpretation activities. These operate across temporal phases and interact with organizational responses and network effects. While this case provides rich context, additional studies across different industries would strengthen generalizability. Future research should explore how technical micro-influencer dynamics vary across different crisis types. Organizations should develop expertise integration protocols acknowledging the evolving influence of technical experts throughout crisis phases. TEMIM extends crisis communication theory by explaining how technical expertise functions as a form of crisis influence when organizational credibility faces challenges and technical complexity requires expert interpretation.

Keywords – Crisis communication, Technical expertise, Micro-influencers, Boeing 737 MAX, Digital engagement, Stakeholder trust, Aviation safety.

Introduction
The landscape of corporate crisis communication has undergone a fundamental transformation in the digital age, challenging traditional models of information dissemination and stakeholder engagement (Coombs, 2022; Ravazzani et al., 2024). Within this evolving ecosystem, micro-influencers, individuals with specialized knowledge and engaged follower bases of 1,000 to 100,000, have emerged as crucial intermediaries in crisis communication, particularly during technical and safety-related crises (Baulant & Sylvestre, 2023).

The Boeing 737 MAX crisis exemplifies how technical expert micro-influencers have become pivotal in shaping crisis narratives. Following the tragic crashes of Lion Air Flight 610 and Ethiopian Airlines Flight 302, aviation experts, pilots, and industry analysts with significant social media followings played a crucial role in interpreting technical information, assessing safety implications, and influencing public perception (Jester & Dolan, 2024). These micro-influencers, operating at the intersection of technical expertise and public communication, demonstrated how specialized knowledge could be translated into

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accessible content that shaped stakeholder understanding and organizational response strategies (Borchers & Enke, 2021).

Micro-influencers' influence is particularly pronounced in technical crises, where the gap between expert knowledge and public understanding can lead to confusion and distrust. These influencers offer expert opinions and serve as independent validators, helping translate complex technical information into digestible insights for broader audiences. Unlike traditional corporate spokespeople or public relations personnel, technical micro-influencers are often seen as more trustworthy due to their independence and expertise, which are crucial for shaping informed public perceptions during high-stakes crises (Liu et al., 2023; Eshun et al., 2024). Their role extends beyond simple information dissemination to active engagement, analysis, and interpretation of complex issues, thus affecting how crises unfold in the public domain.

Despite their growing significance, existing theoretical models have not fully captured the unique role and impact of micro-influencers. Traditional models, such as the Situational Crisis Communication Theory (Coombs, 2007) and the Social-Mediated Crisis Communication Model (Liu et al., 2012), do not adequately address how technical experts operating as micro-influencers shape crisis understanding and response.

This paper introduces the Technical Expert Micro-Influencer Model (TEMIM), a theoretical model for understanding how technically knowledgeable micro-influencers influence outcomes in crisis communication. Drawing on crisis communication theory, digital media research, and social influence models, TEMIM explains how micro-influencers shape stakeholder perceptions and organizational responses during technical crises. Through an in-depth examination of the Boeing 737 MAX crisis, this paper demonstrates how micro-influencers bridge the gap between technical complexity and public understanding.

This research contributes to crisis communication theory by offering a structured model for understanding micro-influencers' impact while providing practical insights for organizations navigating complex technical crises. The findings have significant implications for how organizations identify, engage with, and leverage technical micro-influencers when public trust and technical understanding are paramount.

Theoretical Background

The Boeing 737 MAX crisis marked a significant turning point in corporate crisis communication. After two fatal crashes in 2018 and 2019, which resulted in the deaths of 346 people, Boeing faced enormous challenges in managing the flow of technical information and maintaining stakeholder trust (Jong & Broekman, 2021). Traditional crisis communication strategies were insufficient, as technical experts on social media analyzed flight data, examined the specifications of the MCAS (Maneuvering Characteristic Augmentation System), and explained the safety issues to the public (Rushe, 2022). In response, aviation micro-influencers, including commercial pilots, aerospace engineers, and safety specialists, became important intermediaries. With followers ranging from 5,000 to 100,000, these influencers simplified complex technical information and made it more accessible to the public (Harrison, 2024).

Micro-influencers' rise in technical crisis communication marks a shift in how technical knowledge is shared and understood. These micro-influencers differ from traditional opinion leaders, combining specialized knowledge with ongoing engagement with followers. While opinion leadership theory focuses on how information is spread and its influence on people (Moldovan et al., 2017), technical micro-influencers go beyond simply sharing information. They engage in ongoing conversations, helping their followers understand complex issues in real time.

Existing theories do not fully capture how technical expertise can influence a crisis. Research has shown that expertise is validated through continuous engagement and building credibility (Eshun et al., 2024). Social media platforms allow experts to demonstrate their knowledge in new ways and connect with a wider

audience (Zhang & Li, 2023). These platforms create networks where stakeholders can actively participate in technical discussions.

Technical micro-influencers maintain their credibility through independent analysis rather than through the authority of an organization or traditional spokesperson (Liu et al., 2023). This independence allows them to build trust based on their technical knowledge rather than organizational affiliation (Imad et al., 2021).

Crisis communication theory has traditionally focused on the organizational voice, emphasizing controlling the message and managing the organization's reputation (Coombs, 2007; Jin et al., 2019). However, technical crises, such as the Boeing 737 MAX crisis, challenge these traditional approaches. The Situational Crisis Communication Theory (SCCT) provides useful guidelines but does not address how crises are influenced by experts outside the organization (Liu & Fraustino, 2022).

The Social-Mediated Crisis Communication Model (Liu et al., 2012) predicted some of the changes in digital communication. However, recent research has shown that digital transformation has altered how expertise and credibility are perceived (Zhang & Li, 2023). Stakeholders now trust independent technical experts more than organizations (Jong et al., 2021). This shift in trust demands a new understanding of how credibility works in technical crises, integrating technical expertise and independent analysis (Liu et al., 2023).

In addition, current crisis communication theories do not address how technical knowledge evolves during a crisis or how organizations should interact with technical micro-influencers. Theories on trust formation in technical crises are underdeveloped, as they mainly focus on organizational credibility (Coombs & Holladay, 2022). Given the complexity of technical issues, expert interpretation is essential in these crises. There is also a gap in understanding how organizations should engage with technical micro-influencers, who play an important role as interpreters of technical information.

Therefore, a new model is needed to explain the complexities of technical crisis communication in the digital age. TEMIM provides an approach that explains how technical expertise can influence a crisis and how organizations can interact with technical micro-influencers while maintaining effective communication (Macnamara, 2021).

The Technical Expert Micro-Influencer Model (TEMIM) Framework

The Technical Expert Micro-Influencer Model (TEMIM) conceptualizes the role of technical micro-influencers in crisis communication during complex crises characterized by technical uncertainty. The model emerged from the Boeing 737 MAX crisis, highlighting how technical micro-influencers significantly shaped stakeholder perception and decision-making, especially concerning the technical aspects of the crisis.

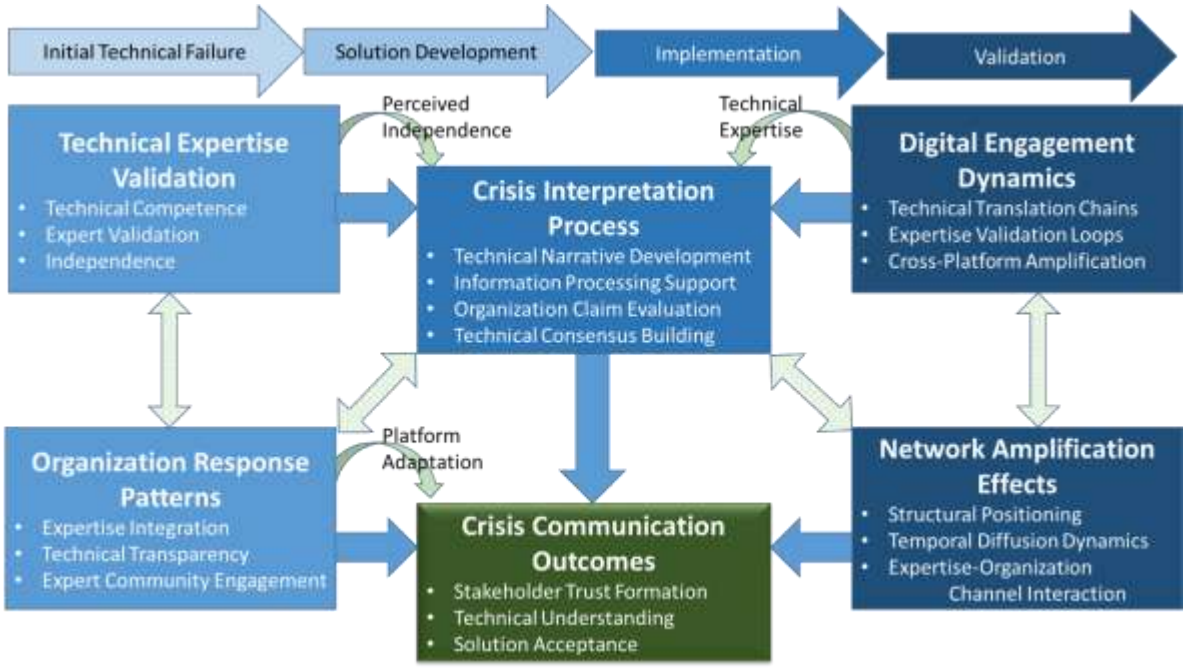

Figure 1. The Expert Technical Expert Micro-Influencer Model (TEMIM)

The TEMIM introduces the idea that crisis communication is a dynamic, phase-dependent process. The role of technical micro-influencers evolves as the crisis progresses, especially as technical uncertainty diminishes and stakeholders gain a clearer understanding of the issues. At the onset of a crisis, technical micro-influencers are key in providing clarity, helping stakeholders comprehend the technical details of the event. As the crisis unfolds, their role extends to validating organizational responses and shaping consensus around solutions. This temporal dimension is crucial to understanding the micro-influencers' impact, as their influence shifts across different stages of the crisis.

The TEMIM centers around three main crisis communication outcomes: stakeholder trust, technical understanding, and solution acceptance. These outcomes are influenced by the interaction between technical micro-influencers' activities, the organizations' responses, and the broader communication networks in which these influencers operate. The model recognizes that the impact of technical micro-influencers is not static; rather, it fluctuates over time, shaped by their technical expertise, engagement with stakeholders, and independent analysis.

Core Components of the Technical Expert Micro-Influencer Model (TEMIM)

The TEMIM comprises interconnected components that explain how technical micro-influencers shape crisis communication outcomes. These components emerged from the systematic analysis of technical crises, with specific patterns observed during the Boeing 737 MAX crisis.

Technical expertise validation in crisis contexts operates through three distinct mechanisms. First, demonstrated technical competence establishes foundational credibility. In the Boeing case, aviation micro-influencers established expertise through detailed analysis of the MCAS system architecture, component interactions, and failure modes. Experienced pilots with significant social media followings provided detailed analyses of flight control system behaviors supported by professional experience and technical documentation (Gebru, 2020).

Second, expert validation occurs through ongoing interactions between micro-influencers and stakeholders demonstrating deep technical understanding (Jong et al., 2021). Third, independence from organizational interests enhances the validation of expertise. Research examining stakeholder trust during technical crises indicates that perceived independence significantly enhances credibility (Liu et al., 2023).

Digital platforms enable specific forms of technical communication that transform expertise in crisis contexts. Platform affordances create interconnected communities that validate, distribute, and possibly amplify technical interpretations (Zhang & Li, 2023).

The model identifies three primary engagement patterns. First, technical translation chains develop as micro-influencers convert complex information into accessible formats, which stakeholders distribute through their networks. Second, expertise validation loops emerge as stakeholders verify technical interpretations through parallel sources, reinforcing credibility patterns. Third, cross-platform amplification occurs as technical analyses move across different digital platforms, reaching diverse stakeholder groups while maintaining technical accuracy.

Crisis interpretation through technical micro-influencers follows distinct patterns that differ from traditional crisis communication processes. The model identifies four key interpretation mechanisms.

First, developing a technical narrative involves coherent explanations for complex technical events. During the Boeing crisis, aviation micro-influencers constructed detailed narratives explaining how MCAS design decisions contributed to accident sequences, making technical causality accessible to broader audiences (Travica, 2020). Second, micro-influencers help stakeholders process and make sense of complex technical information. Third, evaluating organizational claims involves independently assessing technical statements from crisis-involved organizations. Fourth, building technical consensus emerges as micro-influencers contribute to a shared understanding of crisis events (Liu et al., 2023).

In this model, arrow directionality indicates the primary flow of influence between components based on empirical findings. Unidirectional arrows (→) represent relationships where the influence predominantly flows in one direction (e.g., expertise validation processes shape crisis interpretation with minimal reverse influence). Bidirectional arrows (↔) indicate reciprocal relationships where components mutually influence each other through feedback loops (e.g., organizational responses shape and are shaped by ongoing crisis interpretations). This distinction in directionality emerged from our analysis of influence patterns below during the Boeing 737 MAX crisis.

Theoretical Propositions of the TEMIM

The seven propositions of the TEMIM are presented next. Collectively, they delineate the mechanisms through which technical micro-influencers influence crisis communication outcomes. These propositions address distinct yet interrelated aspects of technical crisis communication: expertise validation, digital engagement patterns, temporal dynamics, organizational response mechanisms, and network amplification effects. The theoretical relationships demonstrate systematic variation under specific conditions, suggesting that the effectiveness of technical micro-influencer communication depends on the interaction of multiple factors operating within crisis contexts.

Expertise Validation Propositions. The first proposition explores the relationship between technical micro-influencers' analytical capabilities and stakeholder trust. Evidence from the Boeing 737 MAX crisis reveals that aviation experts who provided independent technical analysis maintained higher engagement and trust than those who primarily redistributed Boeing's communications (Butler, 2021). This effect was particularly pronounced in environments characterized by high technical complexity, where organizational technical credibility was questioned, and in crises with substantial public safety implications (Zhang, 2025). Thus, we propose that:

P1: Technical micro-influencers who demonstrate consistent analytical capabilities in crisis interpretation achieve higher levels of stakeholder trust compared to those who primarily share organizational information.

Further, the perceived independence of technical micro-influencers has been shown to play a moderating role in the relationship between technical expertise and stakeholder trust. Green (2023) documented how perceived independence strengthened the impact of technical analysis on stakeholder trust during multiple aviation safety crises. The moderating effect was amplified when organizations faced significant technical credibility challenges, during crises with high technical complexity, and when diverse technical perspectives were presented in the discourse (Herkert et al., 2020). This leads to the following proposition:

P2: The perceived independence of technical micro-influencers from organizational interests positively moderates the relationship between technical expertise and stakeholder trust.

Digital Engagement Propositions. The third proposition focuses on the engagement patterns of technical micro-influencers during crises. Liu et al. (2023) found that sustained dialogue with stakeholders enhanced understanding of technical issues more effectively than one-way technical communication. This proposition is particularly relevant in environments characterized by high technical complexity, where stakeholders actively seek clarification, and in crises affecting diverse constituencies. Therefore, we propose that:

P3: The effectiveness of technical crisis communication increases when micro-influencers maintain sustained engagement with stakeholder queries rather than solely broadcasting technical information.

The fourth proposition addresses the role of multi-platform communication in crisis management. Studies have shown that technical micro-influencers using multiple digital platforms to disseminate crisis information can achieve a broader reach while maintaining technical accuracy (Shen et al., 2024). This is especially true when stakeholder groups exhibit varied information processing preferences, crisis implications require multiple forms of representation, and technical literacy varies across constituencies (Bukar et al., 2022). Hence, we propose:

P4: Technical micro-influencers who effectively utilize multiple digital platforms to communicate crisis information achieve broader stakeholder reach while maintaining technical accuracy.

Temporal Influence Proposition. The fifth proposition introduces the temporal aspect of technical micro-influencer influence on crisis communication. The impact of technical micro-influencer communication varies across crisis phases, with the maximum effect occurring during periods of high technical uncertainty. This effect operates through three mechanisms: the asymmetry between organizational knowledge and public understanding, the peak influence during initial phases of identifying technical failures, and the synchronization of technical expertise with stakeholder information needs during critical crisis phases (Skade et al., 2024; Hollebeek et al., 2023). Therefore, we propose:

P5: The impact of technical micro-influencer communication on stakeholder understanding demonstrates temporal variation across crisis phases, with the maximum effect occurring during periods of high technical uncertainty.

Organizational Response Proposition. The sixth proposition examines how the engagement with independent technical micro-influencers influences the relationship between organizational technical communication and stakeholder trust. Evidence shows that when organizations engage with technical micro-influencers, especially in high-complexity environments or when multiple technical interpretations exist, stakeholder trust formation is enhanced (Liu et al., 2023; Eshun et al., 2024). This leads to the proposition:

P6: The relationship between organizational technical communication and stakeholder trust is moderated by the level of engagement with independent technical micro-influencers.

Network Amplification Proposition. Finally, the seventh proposition focuses on the role of expertise networks in information diffusion. The structural position of technical micro-influencers within these networks affects how crisis information is diffused. The temporal dynamics of information diffusion also vary based on the micro-influencers' position within expertise networks. When technical micro-influencers occupy central positions within networks, the validation of expertise-based information becomes more pronounced, amplifying its diffusion (Zhang, 2025). Therefore, we propose:

P7: The diffusion of technical crisis information through stakeholder networks demonstrates differential patterns based on the position of technical micro-influencers within expertise networks.

Case Study: Applying the TEMIM Framework to the Boeing 737 MAX Crisis

Research Methodology

This study adopts a secondary case study methodology to analyze the Boeing 737 MAX crisis through the Technical Expert Micro-Influencer Model (TEMIM) lens. Case study research is particularly suitable for examining complex, real-life phenomena and extending theory, particularly when exploring contemporary issues like corporate crisis communication and micro-influencers' role (Kim et al., 2024).

The selection of the Boeing 737 MAX crisis as a case study is justified due to its unique nature, where the interplay between technical micro-influencers and organizational responses played a pivotal role in shaping stakeholder perceptions and actions during the crisis. Data were gathered from three secondary sources to capture the multifaceted dynamics of the crisis. These included 35 media reports, 12 regulatory documents (such as FAA and NTSB releases), and 14 academic and industry analyses. This study uses diverse sources to ensure a robust understanding of the crisis, triangulating findings to reflect the situation's complexity. These sources document the technical challenges faced by Boeing, the regulatory responses, as well as the involvement of technical experts and micro-influencers who contributed to reshaping public and stakeholder understanding of the issue.

The data analysis followed a systematic process designed to identify patterns that align with the components of the TEMIM. Initially, open coding was conducted on all 61 documents to identify recurring themes related to the crisis. This allowed for extracting key elements such as expertise validation, digital engagement, and crisis interpretation, all crucial to understanding micro-influencers' role in crisis communication. Subsequently, axial coding was employed to group these themes into broader categories that align with the TEMIM components, providing a clearer organizational structure to the data. Finally, a temporal analysis was conducted to examine how these patterns evolved throughout the different phases of the crisis, offering insights into how micro-influencers influenced the crisis narrative over time.

To enhance the reliability of the coding process, two researchers independently coded 20% of the dataset, achieving an intercoder agreement rate of 84%. Any discrepancies were resolved through discussion, leading to the refinement of the coding scheme, which was then applied to the entire dataset. Validity was further strengthened through the triangulation of the data sources and expert member checks with two professionals from the aviation industry, ensuring that the findings reflect a comprehensive and accurate representation of the crisis.

Analysis and Discussion

Expertise Validation Patterns. The crisis demonstrated systematic patterns of expertise validation that align with the theoretical mechanisms proposed in the TEMIM. Aviation micro-influencers established credibility through structured technical analysis processes, demonstrating progressive validation of their

expertise through systematic analysis of the flight control system architecture, technical interpretation of accident investigation findings, and independent evaluation of proposed safety modifications.

The relationship between expertise demonstration and stakeholder trust was particularly salient during organizational communication constraints. Technical micro-influencers who maintained demonstrable independence while providing detailed technical analysis achieved enhanced stakeholder trust compared to those perceived as organizationally aligned, aligning with Propositions 1 and 2 (Travica, 2020).

Two aviation micro-influencers exemplify these expertise validation patterns. Juan Browne, a Boeing 777 captain operating the YouTube channel "Blancolirio" (78,000 subscribers during the crisis), established credibility through detailed technical analyses of the MCAS architecture. His expertise validation process demonstrated three key mechanisms identified in the TEMIM. First, he leveraged his professional expertise with Boeing systems to provide nuanced technical explanations, stating in one video: "Having flown Boeing aircraft for 23 years, I can tell you exactly how the control column cutout switch is supposed to function and why the MCAS implementation bypassed this critical safety feature" (March 15, 2019). Second, he consistently engaged with technical questions from viewers, demonstrating depth of knowledge through responsive technical dialogue. Third, he maintained independence by directly challenging Boeing's initial explanations while acknowledging valid points, noting: "Boeing's claim about pilot procedures is technically accurate but misses the fundamental design issue with single-sensor dependency" (April 4, 2019).

Similarly, Peter Lemme, a former Boeing engineer with expertise in flight controls (22,000 Twitter followers during the crisis), established credibility through technical specificity and independence. He published detailed schematics of the MCAS system architecture on his technical blog, explaining complex sensor integration issues with precision that demonstrated deep technical knowledge. His technical credibility was reinforced when the official accident investigations later confirmed many of his early technical assessments. As one follower commented: "Peter identified the AOA [Angle of Attack] disagree alert issue weeks before Boeing acknowledged it" (May 2019). These expertise validation patterns align precisely with the mechanisms proposed in the TEMIM, particularly the relationship between demonstrated technical competence, independence, and stakeholder trust formation.

Digital Engagement Dynamics. The digital engagement patterns observed during the Boeing 737 MAX crisis demonstrated systematic variation consistent with the theoretical mechanisms proposed in the TEMIM. Technical micro-influencers established structured engagement processes that facilitated multilevel technical dialogue (Liu et al., 2023).

First, technical micro-influencers developed systematic approaches to translating complex technical information across digital platforms. Aviation experts who maintained consistent technical accuracy while adapting communication formats to platform-specific affordances achieved a deeper understanding among stakeholders, aligning with Proposition 4 (Zhang et al., 2024).

Second, the engagement patterns revealed structured processes of technical validation through stakeholder interaction. Technical micro-influencers who maintained sustained dialogue with stakeholders regarding MCAS functionality, flight control system behavior, and safety implications demonstrated enhanced effectiveness in facilitating technical understanding (Jasrotia et al., 2024).

Third, the digital engagement dynamics exhibited specific temporal patterns aligned with the phases of crisis evolution, with particular salience during initial technical failure analysis, evaluation of proposed safety modifications, implementation of corrective measures, and validation of system improvements (Travica, 2020), supporting Proposition 5.

Organizational Response Patterns. The Boeing 737 MAX crisis revealed systematic patterns in organizational response to technical micro-influencer engagement. Initial organizational communication

strategies, characterized by limited engagement with external technical expertise, demonstrated reduced effectiveness in maintaining stakeholder trust, particularly when organizational technical communications failed to address stakeholder concerns raised through micro-influencer channels (Marx et al., 2021).

The organization's engagement with technical micro-influencers demonstrated significant variation across crisis phases. The relationship between organizational engagement and stakeholder trust was particularly salient when the organization shifted toward more transparent engagement with technical micro-influencers, especially regarding MCAS design modifications and safety improvements (Imad et al., 2021).

Organizational communication effectiveness demonstrated specific dependencies on technical micro-influencer validation. Liu et al. (2023) documented how organizational technical communications enhanced stakeholder acceptance when supported by independent technical micro-influencer analysis. The organization's adaptation to technical micro-influencers revealed structured patterns of institutional learning, with systematic improvement when the organization developed expertise-integration protocols (Imad et al., 2021).

Network Effects and Temporal Evolution. The network effects of organizational adaptation to technical micro-influencer engagement demonstrated systematic development patterns throughout the Boeing 737 MAX crisis. The organization's integration with technical expertise networks evolved from isolated expertise channels characterized by limited engagement with external technical networks to more sophisticated approaches to network engagement, establishing integrated expertise networks (Liu et al., 2023).

The temporal aspects of organizational network adaptation revealed structured development patterns across crisis phases. The systematic variation in network effectiveness exhibited distinct patterns during critical periods (Imad et al., 2021), with particular salience during the initial response, solution development, and implementation phases.

During the Boeing 737 MAX crisis, technical micro-influencers were crucial in shaping crisis communication dynamics and stakeholder trust. Their expertise validation processes, digital engagement strategies, and independent analysis were instrumental in influencing public understanding and the organizational response. The crisis revealed the importance of organizations engaging with independent experts to maintain credibility and foster trust during technical failures. Micro-influencers, by offering detailed technical analyses and maintaining transparency, were able to fill the gaps left by official organizational communications, demonstrating the need for organizations to integrate external technical expertise into their crisis response efforts. The evolving engagement patterns between technical micro-influencers and stakeholders further reinforced the necessity for organizations to adapt and develop networks with trusted experts, ensuring effective communication throughout the crisis.

Taken together, these patterns across expertise validation, digital engagement, organizational response, and network evolution provide an empirical basis for assessing the full applicability of the TEMIM to the Boeing case.

The Boeing 737 MAX crisis analysis reveals systematic patterns in the technical micro-influencer impact, organizational response, and network evolution. These patterns illustrate the theoretical mechanisms proposed in the model, particularly those related to expertise validation, digital engagement dynamics, and network adaptation. The temporal evolution of an organization's response to technical micro-influencer engagement reveals structured relationships between expertise integration and crisis communication effectiveness, supporting theoretical propositions regarding network effects and temporal dynamics.

The case analysis demonstrates how all seven propositions of the TEMIM operated in practice. The expertise validation propositions (P1-P2) were evident in how aviation experts established credibility

through consistent technical analysis and maintained independence from Boeing. The digital engagement propositions (P3-P4) were manifest in the sustained dialogues micro-influencers maintained with stakeholders across multiple platforms.

The temporal influence proposition (P5) was demonstrated through the shifting impact patterns across crisis phases, with micro-influencers having a particularly strong influence during periods of technical uncertainty. The organizational response (P6) and network amplification (P7) propositions were validated through Boeing's evolving approach to engaging with external technical experts and the diffusion patterns of technical information within interconnected stakeholder networks.

These findings suggest that the TEMIM effectively captures the complex dynamics of technical micro-influencer influence in crisis contexts. The Boeing case illustrates how translating technical expertise, digital platform affordances, and temporal crisis phases interact to shape stakeholder understanding and organizational response patterns.

5. Theoretical and Practical Implications

Theoretical Contributions

The TEMIM, when applied to the Boeing 737 MAX crisis, brings significant theoretical contributions to crisis communication studies. These contributions expand on existing theories while opening new areas for research into the role of technical micro-influencers in crises. The model enhances crisis communication theory by offering new ways to understand how technical expertise influences crises in digital environments, which fills a gap in understanding the role of technical knowledge during digital crises (Saka et al., 2024). It also advances the theory of expertise validation, moving beyond traditional models of source credibility, especially in complex technical contexts.

The TEMIM makes several important theoretical advances compared to existing crisis communication models. For example, the Situational Crisis Communication Theory (SCCT) mainly focuses on organizational messaging strategies and crisis responsibility (Coombs, 2007). However, it does not fully explain how external technical experts impact stakeholders' interpretation of organizational messages. TEMIM extends SCCT by showing how technical micro-influencers affect the effectiveness of crisis responses by either validating or challenging technical claims.

Similarly, TEMIM offers more depth than the Social-Mediated Crisis Communication Model (SMCC). While SMCC recognizes the impact of social media on information flow during crises (Liu et al., 2012), it views expertise as a fixed trait rather than a quality that is actively demonstrated and validated. TEMIM provides a more detailed understanding of how technical expertise is used in crises, explaining how it is validated and translated into influence across various platforms. Additionally, TEMIM addresses a key limitation of both SCCT and SMCC by explaining how expertise-based influence changes and evolves during different phases of a crisis.

The model also enhances our understanding of trust in technical crises by identifying specific ways in which technical micro-influencers build and maintain stakeholder trust. Unlike traditional models of source credibility that focus on preexisting authority, TEMIM shows how credibility is built over time through analysis, stakeholder interaction, and validation of expertise.

Practical Implications

The TEMIM offers important practical insights for organizations managing technical crises in today's digital environment. It addresses operational challenges and provides concrete guidance for managing crisis communication effectively. The model gives organizations a clear strategy for engaging with technical micro-influencers during a crisis, focusing on specific actions that address technical challenges. Organizations must adopt structured approaches that recognize how technical micro-influencers influence

stakeholders at various crisis stages. This includes validating technical expertise, developing digital engagement strategies, assessing network positions, and aligning with the crisis timeline (Shea & Allon, 2025).

The TEMIM outlines several practical communication strategies that organizations can adopt before and during crises. First, organizations should create a protocol to identify and map key technical influencers based on their expertise, network position, and demonstrated analytical ability. This protocol should be part of crisis preparedness and updated regularly as the crisis unfolds.

Second, organizations need to develop clear plans for how technical information will be shared with these influencers at each stage of the crisis, paying particular attention to transparency and addressing uncertainties and corrective measures.

Third, organizations should establish mechanisms for validating technical expertise, such as technical briefings, data-sharing protocols (with proper confidentiality), and forums for technical discussion. Boeing's eventual use of specialized technical briefings during later phases of the 737 MAX crisis shows how such methods can improve stakeholder understanding, although earlier implementation would have been more effective.

Fourth, organizations must develop digital strategies to ensure their technical communications are integrated with or responsive to micro-influencer content across platforms. These strategies should include monitoring, engagement, and adaptation processes for technical content across different channels.

Finally, organizations should implement evaluation metrics to measure the effectiveness of their engagement with technical micro-influencers, focusing on information accuracy, stakeholder understanding, and trust development.

Future Research and Conclusion

Examining technical micro-influencers in crisis communication requires new methods, especially in measuring expertise validation. Researchers need to develop ways to evaluate how technical micro-influencers affect stakeholder understanding of a crisis, considering the timing of expertise validation.

Future research should use various methods to study the role of technical micro-influencers. Qualitative research remains essential to capture how expertise is demonstrated and validated, particularly through case studies, stakeholder interviews, and digital ethnography within technical communities. Quantitative methods such as social network analysis can map influence patterns and empirically test network centrality, the pathways and channels of information diffusion, and further explore the role of specific actors in network amplification. Furthermore, content analysis can evaluate technical communication, and longitudinal studies can track how stakeholders' understanding evolves during a crisis.

The TEMIM provides opportunities for further theoretical development by exploring how technical micro-influencers influence different crisis contexts. While this paper focused on the aviation industry through the Boeing 737 MAX case, future studies should examine how the TEMIM applies to other technical crises. Additional research can explore the effect of various industries and how technical micro-influencer dynamics vary across industries with different technical complexities. Furthermore, it is worth investigating how organizational structures and communication capabilities affect the success of micro-influencer engagement. Another interesting avenue for future research is to investigate the effect of culture and regulatory environments on the influence and validation of technical expertise. Trust is central in this context and varies across cultures, with individualist societies depending on personal evaluation, whereas collectivist cultures rely on group-based validation.

Additionally, future studies could consider the ethical implications of the TEMIM, particularly regarding transparency, stakeholder power dynamics, and organizational responsibilities. As technical

micro-influencers become more influential in shaping crisis interpretations, questions about accountability, expertise verification, and balancing technical accuracy with accessibility must be addressed.

Other interesting areas for further research would be to examine the effect of variations in platform affordances, and to investigate platform algorithms and their impact on the reach of technical micro-influencers at times of crises, and whether it amplifies or limits such reach. Comparative studies across various platforms could further enhance these findings. Sentiment analysis can be applied in further studies to explore the emotional response of various stakeholders to micro-influencers' communication during crises. Investigating shifts in sentiment across different crisis phases could provide interesting insights into how expertise-based communication affects trust, expertise validation, and amplification patterns in the digital context.

Future research could compare technical micro-influencers with non-technical micro-influencers to assess differences in stakeholder trust, perceived credibility, and crisis communication outcomes. Moreover, further studies could examine variations in the responses of different stakeholders (for instance, technical experts versus the general public) to the communication efforts of technical micro-influencers during crises.

The rise of technical micro-influencers as key players in crisis communication marks a fundamental shift in how technical expertise is used in digital environments. This research shows how technical micro-influencers influence stakeholder understanding and crisis outcomes. The TEMIM offers a theoretical foundation for understanding these mechanisms while providing practical guidance for organizations managing technical crises in today's digital world.

The model's integration of expertise validation, digital engagement, and temporal influence patterns addresses gaps in crisis communication theory and establishes new ways to understand how technical expertise functions during crises (Upadhyay & Upadhyay, 2023). By viewing the relationship between technical micro-influencers and organizational crisis communication as a dynamic system, the TEMIM enhances both theoretical knowledge and practical crisis management.

As organizations face increasingly complex technical challenges in environments with fast information flow and diverse stakeholder needs, effectively engaging with technical micro-influencers becomes crucial for successful crisis management. The TEMIM provides a structured approach to understanding these dynamics, helping organizations navigate the complex intersection of technical issues, stakeholder understanding, and organizational credibility during crises. This understanding represents a significant advancement in crisis communication theory and practice, reflecting the evolving role of expertise in digital communication environments.

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Abbreviations

The following abbreviations are used in this manuscript:

TEMIM	Technical Expert Micro-Influencer Model
MCAS	Maneuvering Characteristics Augmentation System
AOA	Angle of Attack

Data Availability: https://osf.io/v9hce/?view_only=15e2921bde2046db87bbe951be2f0c82 **Conflicts of Interest:** The authors declare no conflicts of interest.	SCCT Situational Crisis Communication Theory SMCC Social-Mediated Crisis Communication Model FAA Federal Aviation Administration NTSB National Transportation Safety Board